

WHAT IS CLAIMED IS:

1. A flexible fiberoptic endoscope comprising an insertion member having a distal end portion split longitudinally into a plurality of independently operable working segments each provided with at least one longitudinally extending working channel.
2. The endoscope defined in claim 1, further comprising an additional segment containing illumination and image transmission components.
3. The endoscope defined in claim 2, further comprising a coupling element operatively connected to said insertion member at least at said distal end portion to temporarily and releasably bind said working segments and said additional segment to one another.
4. The endoscope defined in claim 3 wherein said coupling element is a sheath.
5. The endoscope defined in claim 3 wherein said coupling element holds said working segments and said additional segment in a substantially tubular configuration.
6. The endoscope defined in claim 2 wherein said additional segment is the only segment provided with illumination and image transmission components.
7. The endoscope defined in claim 2 wherein said additional segment is cylindrical and centrally disposed with respect to said working segments, said working segments being annular sections in cross-section, said working segments surrounding said additional segment.
8. The endoscope defined in claim 2 wherein at least one of said working segments includes a plurality of longitudinally extending working channels.
9. The endoscope defined in claim 2 wherein said working segments and said additional segment are operatively connected to respective control heads disposed at a proximal end of said

insertion member, said working segments and said additional segment all being independently movable in response to operation of the respective control heads.

10. The endoscope defined in claim 2 wherein at least one segment taken from the group
5 consisting of said working segments and said additional segment is longitudinally displaceable
relative to other segments taken from said group.

11. The endoscope defined in claim 1, further comprising a coupling element operatively
connected to said insertion member at least at said distal end portion to temporarily and
10 releasably bind said working segments to one another.

12. The endoscope defined in claim 11 wherein said coupling element is a sheath
surrounding said working segments.

15 13. The endoscope defined in claim 11 wherein said coupling element holds said working
segments in a substantially tubular configuration.

14. The endoscope defined in claim 1 wherein said at least one of said working segments
is provided with optical components.

20 15. The endoscope defined in claim 14 wherein said optical components are taken from
the group consisting of illumination elements and image-transmission elements.

25 16. The endoscope defined in claim 1 wherein at least one of said working segments
includes a plurality of longitudinally extending working channels.

30 17. The endoscope defined in claim 1 wherein said working segments are operatively
connected to respective control heads disposed at a proximal end of said insertion member, said
working segments being independently movable in response to operation of the respective
control heads.

18. The endoscope defined in claim 17 wherein a proximal end portion of said insertion member divides into a plurality of separate longitudinally extending sections, said control heads being attached to respective ones of said sections.

5 19. The endoscope defined in claim 1 wherein at least of said working segments is longitudinally displaceable relative to another of said working segments.

10 20. The endoscope defined in claim 1 wherein said working segments are permanently bound to one another at a location proximally removed from distal tips of said working segments.

21. A flexible endoscopic method comprising:

introducing an insertion member of a flexible fiberoptic endoscope into a patient, said insertion member having illumination and image transmission components;

15 thereafter, while maintaining a distal end portion of the endoscope in the patient, separating said distal end portion into a plurality of independent longitudinally extending working segments each having at least one longitudinally extending working channel;

passing a plurality of flexible endoscopic surgical instruments through the channels of the working segments;

20 while visualizing internal body tissues of the patient via the illumination and image transmission components, operating the surgical instruments via the respective working segments to perform a surgical operation on said internal body tissues; and

independently maneuvering the separated working segments inside the patient to enable the performance of the surgical operation.

25 22. The method defined in claim 21 wherein the introducing of said insertion member into the patient includes inserting said working segments with a coupling element connected thereto to bind said working segments, further comprising releasing said coupling element from said working segments prior to the separating of said distal end portion into said working segments.

23. The method defined in claim 22 wherein said coupling element is a sheath at least partially surrounding said working segments during the introducing of said insertion member into the patient, the releasing of said coupling element including removing said sheath from said working segments.

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24. The method defined in claim 23 wherein the removing of said sheath includes sliding said sheath in a proximal direction to uncover said working segments.

25. The method defined in claim 21 wherein the maneuvering of the separated working
10 segments includes actuating respective control heads located at a proximal end of the endoscope.

26. The method defined in claim 25, further comprising operating an additional control head at said proximal end of the endoscope to maneuver an additional segment of said distal end portion containing the illumination and image transmission components.

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27. The method defined in claim 26, further comprising sliding one of said working segments in a longitudinal or axial direction relative to another of said working segments.

28. The method defined in claim 21, further comprising sliding one of said working
20 segments in a longitudinal or axial direction relative to another of said working segments.

29. The method defined in claim 21 wherein said surgical operation is taken from the group consisting of suturing, cutting, tying, retracting.

30. A flexible fiberoptic endoscope comprising an insertion member having a proximal end portion split longitudinally into a plurality of independently movable sections each provided with at least one working channel extending longitudinally to a distal end portion of said insertion member.

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31. The endoscope defined in claim 30, further comprising an additional section containing illumination and image transmission components.